



STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH
OR DEVELOPMENT

This invention was made with United State government support awarded by the following agencies: NSF 9810114. The United States has certain rights in this invention.

43. A method of coordinating the execution of multiple program threads executing critical sections of a program, the critical sections accessing common memory and being preceded by lock acquisition sections where writing to a lock variable mediates exclusive access to the common memory, the method comprising the steps of:

for each given thread:

(a) upon reaching a lock acquisition section, reading the lock variable to see if the lock has been acquired by another thread; and

(b) when at step (a) the lock has not been acquired by another thread, allowing the given thread to complete execution of the critical section without acquiring permission to write to the lock variable.

44. The method of claim 43 wherein the lock variable is held within a cache and wherein acquiring permission to write to the lock variable includes the step of obtaining ownership of at least a portion of the cache holding the lock variable.

45. The method of claim 43 wherein during step (b) the execution is not committed and including the further step of:

(c) committing the execution at the completion of the critical section, only if the lock has not be acquired by another thread during that execution.

46. The method of claim 45 wherein acquisition of the lock by another thread is detected by a cache protocol messages.

47. The method of claim 43 wherein during step (b) the execution is not committed and including the further step of:

(c) when during step (b) the resources required for execution without commitment are exhausted, acquiring the lock, committing the execution and continuing with execution until completion of the critical section.